

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

**Mastery Assessment of Unit 2 (Practice version 101)****Question 1**

Let  $f$  represent a function. If  $f[45] = 17$ , then there exists a knowable solution to the equation below.

$$y = 2 \cdot (f[3(x + 7)] + 5)$$

Find the solution.

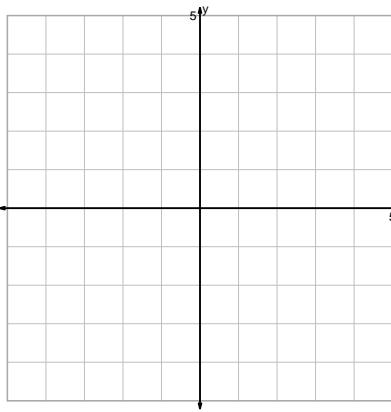
$$x =$$

$$y =$$

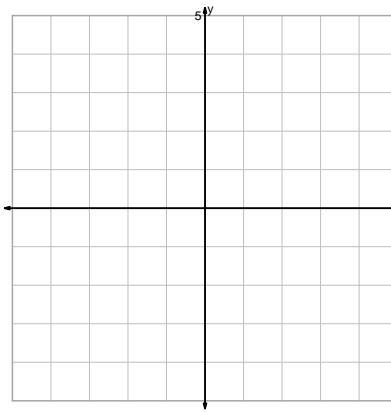
**Question 2**

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

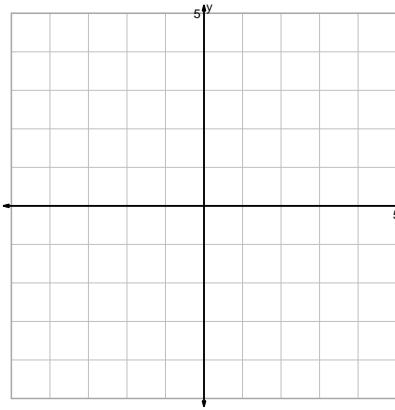
$$y = \log_2(-x)$$



$$y = -2^x$$



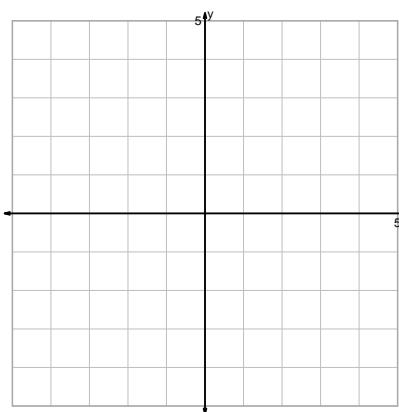
$$y = (x - 2)^3$$



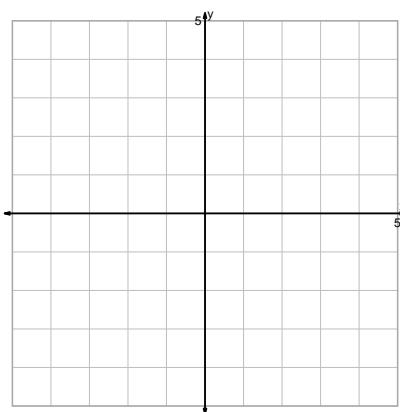
$$y = \frac{\sqrt[3]{x}}{2}$$

Question 2 continued...

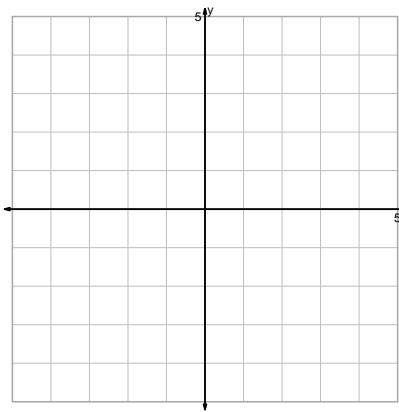
$$y = 2^{2x}$$



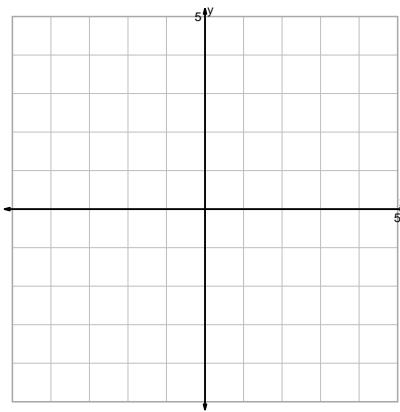
$$y = x^2 - 2$$



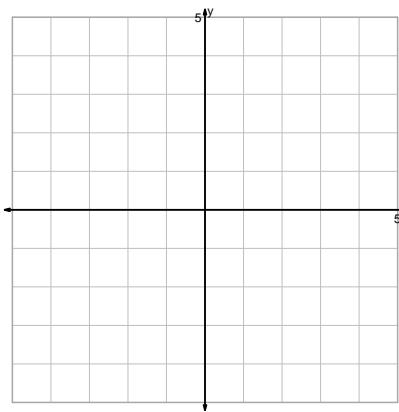
$$y = 2 \cdot x^2$$



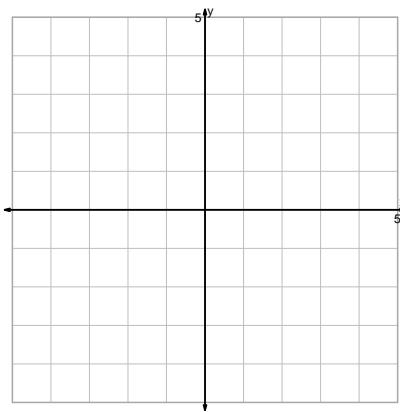
$$y = x^3 + 2$$



$$y = \sqrt{\frac{x}{2}}$$

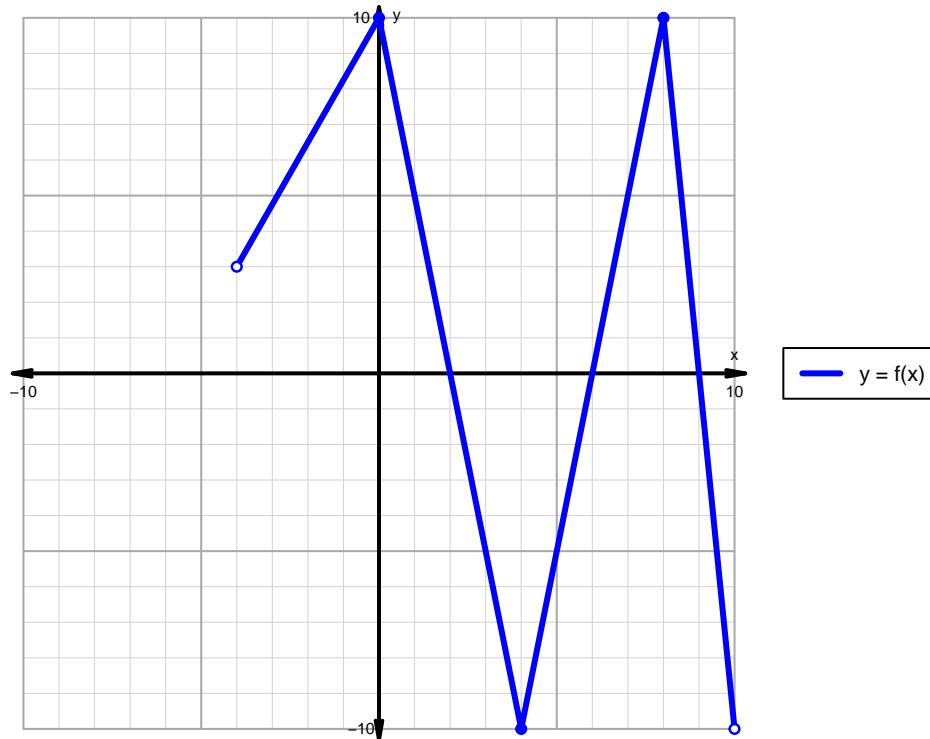


$$y = \sqrt[3]{x+2}$$



**Question 3**

A function is graphed below.



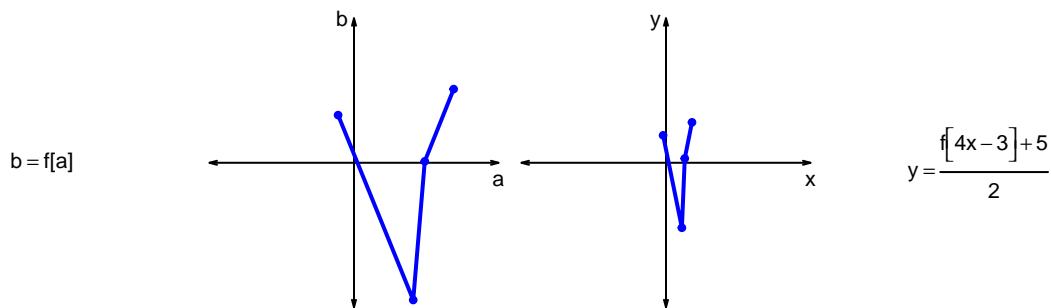
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

## Question 4

Let  $f$  represent a function. The curves  $b = f[a]$  and  $y = \frac{f[4x-3]+5}{2}$  are represented below in a table and on graphs.

a	b	x	y
-11	33	-2	19
41	-95	11	-45
49	1	13	3
69	51	18	28



- a. Write formulas for calculating  $x$  from  $a$  and calculating  $y$  from  $b$ . (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve  $y = f[x]$  into the second curve  $y = \frac{f[4x-3]+5}{2}$ ?

### Question 5

A parent square-root function is transformed in the following ways:

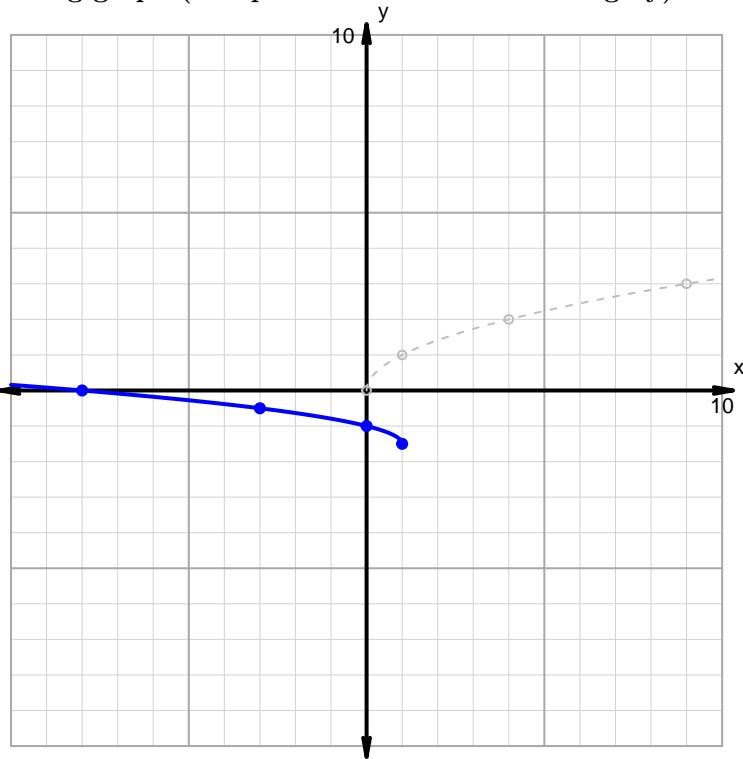
#### Horizontal transformations

1. Horizontal reflection over  $y$  axis.
2. Translate right by distance 1.

#### Vertical transformations

1. Translate down by distance 3.
2. Vertical shrink by factor 2.

Resulting graph (and parent function in dashed grey):



- What is the equation for the curve shown above?

**Question 6**

Make an accurate graph, and describe locations of features.

$$y = \frac{-1}{2} \cdot |x - 5| + 1$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	